

Negrutiu, I., Gharti-Chherti, G. (ed.): **A Laboratory Guide for Cellular and Molecular Plant Biology**. (BioMethods, Vol.4). - Birkhäuser Verlag, Basel - Boston - Berlin 1991. 386 pp. Sfr. 186.

This volume represents a real, detailed laboratory guide for techniques of cell and molecular plant biology, each chapter describing not only necessary materials, culture media and step-by-step procedures, but also how to overcome the most usual problems (troubleshooting guide). Following techniques are described:

1. Cellular Techniques: Isolation and culture of protoplasts, Mutagenic treatment of isolated cells, Somatic hybridization (Protoplast fusion-the PEG system, Electrofusion of protoplasts), Dilution series as a tool to improve medium composition, Plating efficiency evaluation in a peroxidase assay, Production of haploid plants (Pollen culture for haploid production in tobacco, Haploid induction via anther culture as a tool to study developmental processes), Isolation of viable microspores and immature pollen grains from cereal inflorescences, Isolation of viable sperm cells from corn (*Zea mays*) pollen grains, Embryo rescue in *Nicotiana plumbaginifolia*, Use of iodide ions for chemical reduction of the oxidative agent H_2O_2 and hypochlorites after application as decontaminating agents for plant tissues.
2. Transformation Techniques: *Agrobacterium* transformation of various *Arabidopsis* explants, Direct gene transfer (Direct gene transfer into protoplasts-the chemical approach, Direct gene transfer - electroporation for transient expression in protoplasts).
3. Extraction Techniques: Isolation of DNA and RNA from *Arabidopsis thaliana* (Large-scale extraction of *Arabidopsis* genomic DNA, Mini-scale DNA extraction procedure, Extraction of nuclei and nuclear DNA, RNA extraction procedure, Isolation of poly(A+)-RNA), Total DNA extraction- alternative protocols, Characterization of mitochondrial DNA from minute quantities of plant material, Generation of large amounts of cDNA by polymerase chain reaction from small amounts of total RNA, Isolation of nuclei from plant tissues, Extraction of amino acids from plant samples and their analysis using ion exchange chromatography, Electroelution of proteins from plant tissues, Extraction, purification and analysis of endogenous indoleacetic acid and abscisic acid.
4. Aspects of Structural and Functional Analysis of Genomes and Genes: Southern blot analysis of transgenic *Nicotiana* sp., Northern blot analysis of ADH (alcohol dehydrogenase) mutants in *Arabidopsis*, Western blot detection of proteins synthesized transiently in transfected plant protoplasts, Cloning nuclear single copy sequences for RFLP analysis, Run-on transcription in isolated plant nuclei, Gel retardation assay using large DNA probes, DNase I analysis of retarded complexes, Gel retardation using oligonucleotide probes, Pulsed-field gel electrophoresis of plant DNA, Assessing methylation of inserted DNA by restriction with isoschizomeric enzymes and inducing demethylation with 5-azacytidine.
5. Cytological Techniques: Karyotyping with protoplast procedures, *In situ* hybridization (Gene targeting in plant metaphase chromosomes by *in situ* hybridization with tritiated probe DNA, Protocols for *in situ* hybridization-the biotinylation technique), Flow cytometry of nuclei for ploidy and cell cycle analysis, Control of cell cycle progression, Induction and isolation of micronuclei and microprotoplasts.
6. Appendices: Culture media and basic stock solution, Gus as a reporter system for transient expression, Yeast RAS 2 acts as a "suicide" gene in transient expression assays of *Nicotiana* mesophyll protoplasts, Extraction and purification of IAA and ABA, *In situ* hybridization. The list of contributing authors is long and with exception of three authors represents European schools, namely the Belgian one. As is clearly seen from the list of topics dealt with, the book covers the whole field of cell and molecular biology and can thus be highly recommended as a very useful laboratory manual for everybody working in the mentioned area.

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